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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/757,529	01/11/2001	Toshihiro Mori	018775-814	8100

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EXAMINER

BALI, VIKKRAM

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/757,529	Applicant(s) MORI, TOSHIHIRO	
	Examiner Vikkram Bali	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☒ Claim(s) 27-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

In response to the amendment filled on 5/23/2005, all the amendments have been entered, and the action follows:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo (US 6292583) in view of Kametani et al (US 6538248).

Regarding Claim 16, Maruo discloses a specified pattern recognition apparatus comprising:

a plurality of filters provided for detecting an image at a first resolution (Figure 1, Step S1, Two-dimensional wavelet-transform; Column 6, Lines 57-67, Column 7, Lines 1-51. Wavelet transform comprises a plurality of low-pass and high-pass filtering.);

an extractor which extracts a specified pattern included in the image with use of a combination of filters in said plurality of filters to determine a position of the specified pattern (Figures 5 and 6; Column 7, Lines 34-51. Edge components of the input signal have been extracted by wavelet transformation.);

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a circuit for generating an image of the specified pattern at a resolution lower than the first resolution (Figure 1, Step S2, Binarization Process. In addition to the different lower resolution images generated by the wavelet transform, binarization process will further generate an image of lower optical resolution.);

a calculator which determines the position of the specified pattern more precisely than said extractor, based on the position determined by said extractor and the lower resolution image (Figure 1, Step S3, Hough-Transform; Column 5, Lines 59-63; Column 6, Lines 3-56).

However, Maruo fails to disclose determine of position and the rotation as claimed. Kametani teaches the calculating of the position and the rotation (see col. 14, lines 25-35, calculating of the position and the rotation of the specified pattern) as claimed. It would have been obvious to one ordinary skilled in the art at the time of invention to combine the two references as they are analogous because they are solving similar problem of inspection. The determining of the position and the rotation of the specified pattern as taught by Kametani can be introduce in to the Maruo's system and that provides a system for detecting errors in the target specified pattern.

With regards to Claim 17, arguments analogous to those presented for Claim 16 are applicable to Claim 17. Maruo further discloses:

an image extractor which extracts partial images included in the specified pattern, in the bi-level image data obtained by said binarizer (Figures 3, 7 and 8; Column 8, Lines 30-57. The circle is the extracted partial image.);

a reduced image generator which generates a reduced image of an image including the specified partial image, the reduced image having a lower resolution than the image including the specified images (Figures 8 and 15, Wavelet transform inherently generates lower resolution image of the specified partial image (The circle)).

However, Maruo fails to disclose determine of position and the rotation as claimed. Kametani teaches the calculating of the position and the rotation (see col. 14, lines 25-35, calculating of the position and the rotation of the specified pattern) as claimed. It would have been obvious to one ordinary skilled in the art at the time of invention to combine the two references as they are analogous because they are solving similar problem of inspection. The determining of the position and the rotation of the specified pattern as taught by Kametani can be introduce in to the Maruo's system and that provides a system for detecting errors in the target specified pattern.

Regarding Claim 20, Maruo further discloses the specified pattern detection apparatus according to Claim 16, wherein the plurality of filters are providing for extracting a plurality of specified patterns(Figures 5 and 6; Column 7, Lines 34-51. Edge components of the input signal have been extracted by wavelet transformation.).

With regards to Claim 21, arguments analogous to those presented for Claim 20 are applicable to Claim 21.

With regards to Claim 22, arguments analogous to those presented for Claim 16 are applicable to Claim 22.

With regards to Claim 23, arguments analogous to those presented for Claim 17 are applicable to Claim 23.

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Regarding Claim 24, Maruo discloses a specified pattern detection apparatus

Comprising:

a binarizer which binarizes input image data to provide bi-level image data (Figures 1 and 2, Binarization process; Column 5, Lines 57-67, Column 6, Lines 1-5);

a storage device which stores the bi-level image data obtained by said binarizer (Figure 11, RAM 34);

a partial image extractor which extracts specified partial images in the bi-level image stored in said storage device with a filter for conversion (Figures 1 and 2, Hough transform; Column 6, Lines 5-6);

a gain calculator which calculates and stores information for each pixel in the bi-level image, in which the specified partial images are extracted, with a gain filter, the information representing a distance from the each pixel to the specified partial image (Column 6, Lines 5-20; Formulas (1) and (2));

a position calculator which calculates ideal positions of the partial images to be included in a specified pattern (Column 6, Lines 22-56; Column 9, Lines 12-23; Figure 3A; Column 10, Lines 46-67, Column 11, Lines 1-21; Column 13, Lines 23-51); and

a gain output device which outputs a gain on the ideal positions based on the information obtained and stored by said gain calculator (Figure 3A; Column 10, Lines 46-67, Column 11, Lines 1-21). However, he fails to explicitly disclose the specified pattern as claimed. Kametani teaches the inspection of the wafer wherein the specified pattern is use (see col. 7, lines 25-35, the specified is the chips on the substrate) as claimed, . It would have been obvious to one ordinary skilled in the art at the time of

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invention to combine the two references as they are analogous because they are solving similar problem of inspection. The determining of the position and the rotation of the specified pattern as taught by Kametani can be introduced into the Maruo's system and that provides a system for detecting errors in the target specified pattern

Regarding Claim 25, Maruo further discloses the specified pattern detection apparatus according to Claim 24, wherein said conversion filter converts the partial image stored in said storage device to 1-bit data (Figures 1B and 1C; Column 9, Lines 24-58).

With regards to Claim 26, arguments analogous to those presented for Claim 24 are applicable to Claim 26.

Regarding Claims 18 and 19, Maruo discloses wavelet transform of the input image (convolving the image by a plurality of filters, i.e., filtering in horizontal, diagonal and vertical directions) for outputting detailed information on image data (high-pass information which corresponds to the edge data; Column 7, Lines 46).

Maruo does not explicitly disclose the filters in the combination of filters are positioned along a circumferential line. However, it is well known that detected edges are the boundaries of patterns in the image which indicates that filtering is ultimately performed on the circumferential lines (Official Notice).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Maruo's invention to position filters along a circumferential line because it is a standard procedure to recognize image contours or boundaries which will improve the accuracy of pattern recognition system.

Allowable Subject Matter

3. Claims 27-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

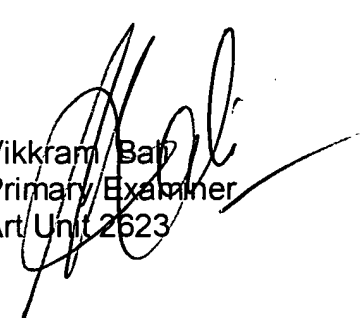
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 571.272.7415. The examiner can normally be reached on 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571.272.7414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vikkram Bali
Primary Examiner
Art Unit 2623



vb
September 28, 2005